The third-closest point to origin

Write a program that reads the coordinates of multiple points to see which point is the third-closest point to the origin.

Input

The first line is a single integer representing the number of points. (always ≥ 3)

For the following lines, each line has two real numbers, separated by a space, representing x and y coordinates of the point. There is one point per line.

Output

The point that is the third-closest point to origin. (It is guaranteed that the testing data will only have points with unique distance) displayed in the form of

#*Point ID*: (*x coordinate*, *y coordinate*)

Note: The first point in the input has the Point ID of **1**

Example

Input (from keyboard)	Output (on screen)
4 **0.1 0.1** **0.2 0.2** **10.0 10.0** **3.0 3.0**	**#4: (3.0, 3.0)**

Hint

Create a list that stores inner lists, which have the following structure:

[*distance to origin*, *Point ID*, *x coordinate*, *y coordinate***]**

You can then sort the list, then obtain the answer from the index 2.